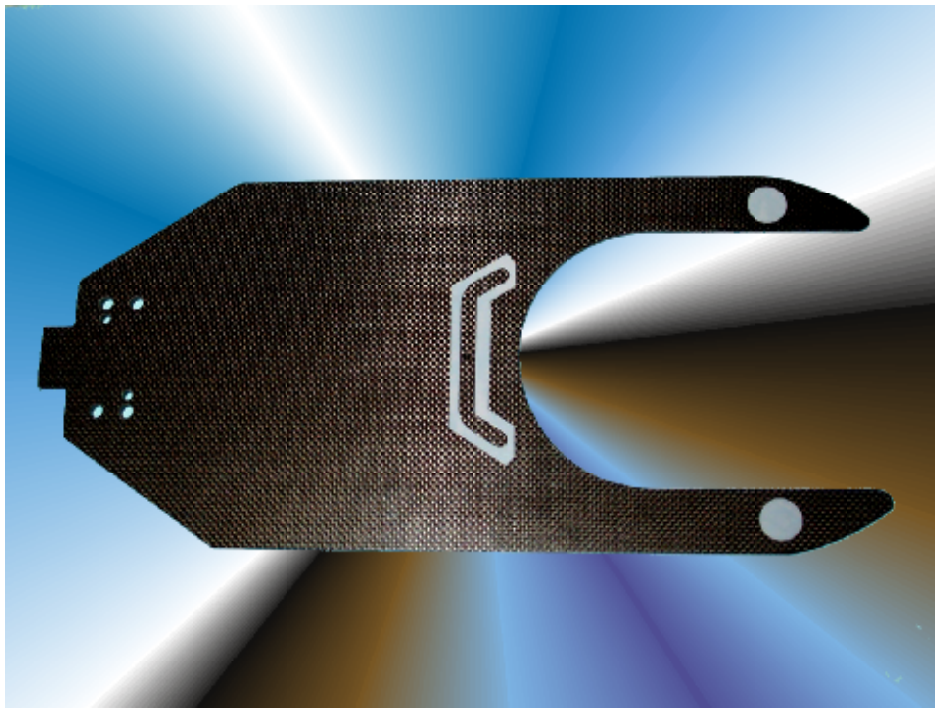


Carbon EE

Carbon fiber end effectors for wafer handling



Carbon fiber end effectors

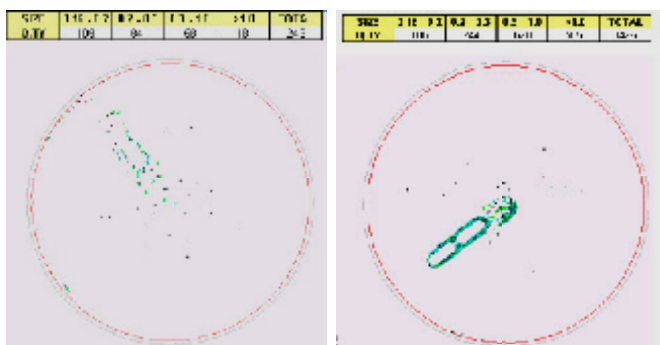
The use of carbon fiber in wafer handling end effectors construction gives many advantages, such as longer duration, light weight, good resistance to chemicals and shock resistance.

All those features will result into a much higher MTBF of the part, which will give a definitely lower cost of ownership.

Carbon is stiff and flexible, and can't be permanently deformed. It is also conductive, and then will not give ESD charges generation, and can be tooled in a fast and accurate way to prepare parts even in small series.

Specifications	
Type of carbon used	Bidirectional or unidirectional carbon fiber, from 50 to 220 gr/m ²
Matrix material	Epoxy or phenolic resin
Specific weight	1.5 (carbon)
Elastic Modulus	28,000 Kg/mm ² - carbon only - 15,000 Kg/mm ² with matrix (AI=10000)
Resistivity	Typical 10 µΩ·m (carbon without matrix)
Temperature	Environment 80°C; wafer - handling time - 300°C (kapton pads)
Resistance to chemicals	Good for all CMP chemicals; not suitable for strong organic solvents
UV resistance	Special stainless steel layers can be used for UV protection
Vacuum pads	PTFE, PTFE/Ceramic or Polyimide (Kapton) depending on application
Tooling tolerances	0.2 mm max on external shapes - 0.3 mm max. on planarity test
Quality control	100% sampling: surface, dimensions, planarity, final assembly, functional
Packaging	Each item is thermally sealed in a nylon bag after final cleaning
Contamination features	Outgassing test for amines: at room temperature no changes; at 110°C + 18 ppB, decreasing to +0 after 3 minutes Particles: maximum total of 50 particles.cm ² (KLA surfscan 6200, class1 clean room, teflon pads) 0.16-0.2µ: 21, 0.2-0.3µ:15, 0.3-1µ:11, >1µ: 3

(Specifications are subject to change without any obligation on the part of manufacturer)



Synopsis part vs. Original part
(Particle test at Customer site)

Defect reduction and MTBF increase (Customer long term test)

